

## **REMARKS**

This is a full and timely response to the non-final Office Action of February 24, 2006.

Reexamination, reconsideration, and allowance of the application and all presently pending claims are respectfully requested.

Upon entry of this First Response, claims 1-20 are pending in this application. Claims 1, 2, 6, 7, 10-12, 14, and 15 are directly amended herein, and claims 17-20 are newly added. It is believed that the foregoing amendments add no new matter to the present application.

### **Response to §112 Rejections**

Claims 1, 2, 6, 7, 10-12, 14, and 15 presently stand rejected under 35 U.S.C. §112, second paragraph, as allegedly failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. Claims 1, 2, 6, 7, 10-12, 14, and 15 have been amended thereby mooted the 35 U.S.C. §112, second paragraph, rejections of these claims. Accordingly, Applicants respectfully submit that pending claims 1, 2, 6, 7, 10-12, 14, and 15, as amended, satisfy the requirements of 35 U.S.C. §112, second paragraph. Accordingly, the 35 U.S.C. §112 rejections of these claims should be withdrawn.

### **Response to §103 Rejections**

In order for a claim to be properly rejected under 35 U.S.C. §103, the combined teachings of the prior art references must suggest all features of the claimed invention to one of ordinary skill in the art. See, *e.g.*, *In Re Dow Chemical Co.*, 837 F.2d 469, 5 U.S.P.Q.2d 1529, 1531 (Fed. Cir. 1988), and *In re Keller*, 642 F.2d 413, 208 U.S.P.Q. 871, 881 (C.C.P.A. 1981). “Obviousness

cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching or suggestion supporting the combination. Under section 103, teachings of references can be combined *only* if there is some suggestion or incentive to do so.” *ACS Hospital Systems, Inc. v. Montefiore Hospital*, 732 F.2d 1572, 1577, 221 U.S.P.Q. 929, 933 (Fed. Cir. 1984).

### Claim 1

Claim 1 presently stands rejected under 35 U.S.C. §103 as purportedly being unpatentable over *Gibson* (U.S. Patent No. 6,922,806) in view of *Matsumoto* (U.S. Patent No. 6,522,731). However, “(t)he PTO has the burden under section 103 to establish a *prima facie* case of obviousness. It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references.” *In re Fine*, 837 F.2d 1071, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988) (Citations omitted). The Office Action fails to establish that the cited art suggests a sufficient motivation for combining *Gibson* and *Matsumoto*, and the Patent Office, therefore, fails to establish a *prima facie* case of obviousness.

In this regard, in attempting to justify the alleged combination of *Gibson* and *Matsumoto*, it is alleged in the Office Action that:

“it would have been obvious to a person having an ordinary skill in the art at the time the invention was made to implement the teachings of Gibson et al. To include a configuration to interleave FEC codes as taught by Matsumoto. This modification would have been obvious because a person having ordinary skill in the art would have been motivated in order to increase the data amount of the transmission while at the same time reducing the attenuation amount of the telephone line providing the transmission path due to the reduced carrier frequency, thereby extending the communication distance and the transmission rate within the service area (see col. 19, lines 43-52).” Page 4.

Applicants respectfully assert that there is no column “19” in either *Gibson* or *Matsumoto*, and it is, therefore, unclear as to which portion of the cited art the Patent Office is relying to justify the combination of *Gibson* and *Matsumoto*. Further, Applicants assert that the alleged motivation for combining *Gibson* and *Matsumoto* is not adequately supported by the cited art, and the 35 U.S.C. §103 rejection of claim 1 is, therefore, improper. “Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application for a showing of the teaching or motivation to combine prior art references.” *In re Dembiczcak*, 175 F.3d 994, 50 U.S. P.Q.2d 1614, 1617 (Fed. Cir. 1999).

In addition, even if it is assumed for the sake of argument that the alleged combination of *Gibson* and *Matsumoto* is proper, Applicants respectfully submit that the alleged combination fails to suggest each feature of claim 1, as amended. In this regard, claim 1 presently reads as follows:

1. A forward error correction communication system, comprising:  
a forward error correction (FEC) module configured to define a plurality of FEC code words, each of the FEC code words having a plurality characters and each of the characters having a plurality of bits; and  
*a transmission module configured to interleave the FEC code words across multiple communication connections such that, for each respective FEC code word, characters of said each respective FEC code word are transmitted across multiple ones of the communication connections and such that characters of said each respective FEC code word that are transmitted over the same communication connection are separated by at least one character of another of the FEC code words but bits of the same character of said each respective FEC code word are successively transmitted over the same communication connection without any intervening bits from other characters*, wherein each of the communication connections is communicatively coupled to a remote receiving unit.  
(Emphasis added).

Applicants respectfully assert that the alleged combination of *Gibson* and *Matsumoto* fails to suggest at least the features of claim 1 highlighted hereinabove.

In particular, *Gibson* appears to teach that bits of the same coded packet are interleaved across multiple communication connections. See column 3, lines 7-12, and Figure 5. If *Gibson* is modified according to *Matsumoto* so that portions of the coded packet on the same communication connection are interleaved with other coded packets, as is apparently alleged in the Office Action, then it appears that the bits of the same coded packet would be separated by (*i.e.*, interleaved with) bits from other coded packets. Thus, the modified transmission module would not be “configured to interleave the FEC code words across multiple communication connections... such that characters of said each respective FEC code word that are transmitted over the same communication connection are separated by at least one character of another of the FEC code words *but bits of the same character of said each respective FEC code word are successively transmitted over the same communication connection without any intervening bits from other characters*,” as described by claim 1. (Emphasis added).

For at least the above reasons, Applicants respectfully assert that the 35 U.S.C. §103 rejection of claim 1 is improper and should be withdrawn.

### Claims 2-5 and 18

Claims 2-5 presently stand rejected in the Office Action under 35 U.S.C. §103 as allegedly being unpatentable over *Gibson* in view of *Matsumoto*. In addition, claim 18 has been newly added via the amendments set forth herein. Applicants submit that the pending dependent claims 2-5 and 18 contain all features of their respective independent claim 1. Since claim 1 should be allowed, as argued hereinabove, pending dependent claims 2-5 and 18 should be allowed as a matter of law for at least this reason. *In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

## Claim 6

Claim 6 presently stands rejected under 35 U.S.C. §103 as purportedly being unpatentable over *Gibson* in view of *Matsumoto*. Claim 6, as amended, reads as follows:

6. A forward error correction communication system, comprising:
  - a forward error correction (FEC) module configured to define a plurality of FEC code words, each of the FEC code words having a plurality of characters and each of the characters having a plurality of bits, the plurality of FEC code words including a first FEC code word and a second FEC code word; and
  - a transmission module configured to transmit the FEC code words to a remote receiving unit via a plurality of communication connections, *the transmission module configured to ensure that characters of the first FEC code word are transmitted across multiple ones of the communication connections and that characters of the second FEC code word are transmitted across multiple ones of the communication connections, the transmission module configured to ensure that a first character from the first FEC code word is separated from a second character of the first FEC code word by at least a character of the second FEC code word when the first and second characters are transmitted over one of the communication connections, said transmission module further configured to transmit the first FEC code word such that bits of the first character are successively transmitted over the one communication connection without any intervening bits from other characters.* (Emphasis added).

For at least reasons similar to those set forth above in the arguments for allowance of claim 1, Applicants respectfully assert that the alleged combination of *Gibson* and *Matsumoto* is improper and also fails to suggest at least the features of claim 6 highlighted above. Accordingly, the 35 U.S.C. §103 rejection of claim 6 should be withdrawn.

### Claims 7-9 and 19

Claims 7-9 presently stand rejected in the Office Action under 35 U.S.C. §103 as allegedly being unpatentable over *Gibson* in view of *Matsumoto*. In addition, claim 19 has been newly added via the amendments set forth herein. Applicants submit that the pending dependent claims 7-9 and 19 contain all features of their respective independent claim 1. Since claim 1 should be allowed, as argued hereinabove, pending dependent claims 7-9 and 19 should be allowed as a matter of law for at least this reason. *In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

### Claim 10

Claim 10 presently stands rejected under 35 U.S.C. §103 as purportedly being unpatentable over *Gibson* in view of *Matsumoto*. Claim 10, as amended, reads as follows:

10. A forward error correction communication system comprising:  
memory for storing a plurality of forward error correction (FEC) code words, each of the FEC code words having a plurality of characters and each of the characters having a plurality of bits; and  
means for transmitting the FEC code words to a receiving unit via a plurality of communication connections that are communicatively coupled to the receiving unit, *the transmitting means configured to ensure that, for each respective FEC code word, characters of said each respective FEC code word are transmitted across multiple ones of the communication connections, the transmitting means configured to ensure that characters of said each respective FEC code word that are transmitted along the same communication connection are interleaved with characters from at least one other FEC code word, the transmitting means further configured to ensure that, for each respective character of the FEC code words, bits of said each respective character are not separated by bits of other characters when transmitted across the communication connections.* (Emphasis added).

For at least reasons similar to those set forth above in the arguments for allowance of claim 1, Applicants respectfully assert that the alleged combination of *Gibson* and *Matsumoto* is improper

and also fails to suggest at least the features of claim 10 highlighted above. Accordingly, the 35 U.S.C. §103 rejection of claim 10 should be withdrawn.

### **Claim 11**

Claim 11 presently stands rejected under 35 U.S.C. §103 as purportedly being unpatentable over *Gibson* in view of *Matsumoto*. Claim 11, as amended, reads as follows:

11. A method for communicating forward error correction code words, comprising the steps of:

transmitting a plurality of forward error correction (FEC) code words across a plurality of communication connections to a remote receiving unit, each of the FEC code words having a plurality of characters and each of the characters having a plurality of bits; and

*for each respective FEC code word, ensuring that characters of said each respective FEC code word are transmitted across multiple ones of the communication connections via the transmitting step and ensuring that characters of said each respective FEC code word that are transmitted along the same communication connection are interleaved with characters from at least one other FEC code word;*

*wherein the transmitting step comprises the step of, for each respective character of the FEC code words, successively transmitting bits of said each respective character such that said bits are not separated by bits of other characters.*

For at least reasons similar to those set forth above in the arguments for allowance of claim 1, Applicants respectfully assert that the alleged combination of *Gibson* and *Matsumoto* is improper and also fails to suggest at least the features of claim 11 highlighted above. Accordingly, the 35 U.S.C. §103 rejection of claim 11 should be withdrawn.

### Claims 12, 13, and 20

Claims 12 and 13 presently stand rejected in the Office Action under 35 U.S.C. §103 as allegedly being unpatentable over *Gibson* in view of *Matsumoto*. In addition, claim 20 has been newly added via the amendments set forth herein. Applicants submit that the pending dependent claims 12, 13, and 20 contain all features of their respective independent claim 1. Since claim 1 should be allowed, as argued hereinabove, pending dependent claims 12, 13, and 20 should be allowed as a matter of law for at least this reason. *In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

### Claim 14

Claim 14 presently stands rejected under 35 U.S.C. §103 as purportedly being unpatentable over *Gibson* in view of *Matsumoto*. Claim 14, as amended, reads as follows:

14. A method for communicating forward error correction code words, comprising the steps of:

defining a plurality of forward error correction (FEC) code words, each of the FEC code words having a plurality of characters and each of the characters having a plurality of bits, the plurality of FEC code words including a first FEC code word and a second FEC code word; and

interleaving the plurality of FEC code words across a plurality of communication connections *such that characters of the first code word are transmitted across multiple ones of the communication connections and such that characters of the first FEC code word are separated by characters from the second FEC code word but bits of each respective character of the first FEC code word are not separated by bits of other characters.* (Emphasis added).

For at least reasons similar to those set forth above in the arguments for allowance of claim 1, Applicants respectfully assert that the alleged combination of *Gibson* and *Matsumoto* is improper

and also fails to suggest at least the features of claim 14 highlighted above. Accordingly, the 35 U.S.C. §103 rejection of claim 14 should be withdrawn.

**Claims 15-17**

Claims 15 and 16 presently stand rejected in the Office Action under 35 U.S.C. §103 as allegedly being unpatentable over *Gibson* in view of *Matsumoto*. In addition, claim 17 has been newly added via the amendments set forth herein. Applicants submit that the pending dependent claims 15-17 contain all features of their respective independent claim 1. Since claim 1 should be allowed, as argued hereinabove, pending dependent claims 15-17 should be allowed as a matter of law for at least this reason. *In re Fine*, 5 U.S.P.Q.2d 1596, 1600 (Fed. Cir. 1988).

## CONCLUSION

Applicants respectfully request that all outstanding objections and rejections be withdrawn and that this application and all presently pending claims be allowed to issue. If the Examiner has any questions or comments regarding Applicants' response, the Examiner is encouraged to telephone Applicants' undersigned counsel.

Respectfully submitted,

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